

11. sklop nalog: TEHNIKA INTEGRIRANJA

1. Odvajaj naslednje funkcije.

- | | | |
|-------------------------------------|---|--|
| (a) $\int (x^3 + x^2) dx$ | (f) $\int \frac{x\sqrt{x-x^2-5}}{x^2\sqrt{x}} dx$ | (j) $\int \frac{\cos(2x)}{\cos x + \sin x} dx$ |
| (b) $\int 4 \sin x dx$ | (g) $\int \frac{\sin(2x)}{2 \sin x} dx$ | (k) $\int \sin^2 x dx + \int \cos^2 x dx$ |
| (c) $\int (x^2 - 3x + 4) dx$ | (h) $\int e^x (1 - e^{-x} x^{-2}) dx$ | (l) $\int e^{\ln x} dx$ |
| (d) $\int \sqrt{x} dx$ | (i) $\int \frac{1-\sin^2 x}{\sin^2 x} dx$ | (m) $\int \log_3 \sqrt[3]{3} dx$ |
| (e) $\int (x^2 - \frac{1}{x^2}) dx$ | | |

2. Z vpeljavo nove spremenljivke izračunaj nedoločene integrale.

- | | | |
|-------------------------------|--------------------------------------|--|
| (a) $\int (x^2 + 1)^7 2x dx$ | (g) $\int \frac{dx}{x+2}$ | (l) $\int (2 + 3 \ln x) \frac{dx}{x}$ |
| (b) $\int (x + 1)^5 dx$ | (h) $\int \frac{5dx}{\cos^2(3x)} dx$ | (m) $\int \frac{dx}{x \ln x}$ |
| (c) $\int \sin(5x - 2) dx$ | (i) $\int \frac{x^2}{8-x^3} dx$ | (n) $\int (x^2 + 5x - 7)^{10} (2x + 5) dx$ |
| (d) $\int \sqrt{10x - 3} dx$ | (j) $\int \frac{x dx}{(x^2 + 1)^2}$ | (o) $\int \frac{\sin(\ln x)}{2x} dx$ |
| (e) $\int \sin^3 x \cos x dx$ | (k) $\int \frac{e^x}{3e^x + 2} dx$ | (p) $\int \frac{\sqrt{1 + \ln x}}{2x} dx$ |
| (f) $\int x e^{-x^2} dx$ | | |

3. S pomočjo delnega integriranja (per-partes) izračunaj integrale.

- | | | |
|---------------------------------|------------------------|-----------------------|
| (a) $\int \frac{\ln x}{x^2} dx$ | (c) $\int \ln x dx$ | (e) $\int x \ln x dx$ |
| (b) $\int x^2 e^{3x} dx$ | (d) $\int x e^{3x} dx$ | |

4. S pomočjo matematičnega priročnika izračunaj naslednje integrale.

- | | | |
|---|--|-------------------------------------|
| (a) $\int \frac{x^2}{(3x+2)^8} dx$ | (e) $\int \sin^2 x \cos^5 x dx$ | (i) $\int \frac{dx}{e^x + 1} dx$ |
| (b) $\int \frac{dx}{x(15x-2)^3} dx$ | (f) $\int \frac{dx}{(1+\sin(2x))^2} dx$ | (j) $\int \frac{x^2}{\ln x} dx$ |
| (c) $\int x \sqrt{x^2 + 25} dx$ | (g) $\int \frac{dx}{\sin(2x) \cos^3(2x)} dx$ | (k) $\int \frac{\arccos x}{x^2} dx$ |
| (d) $\int \frac{dx}{\sqrt{2x^2 + 5x - 7}} dx$ | (h) $\int \frac{\cos^5(3x)}{\sin(3x)} dx$ | (l) $\int \cos(\ln x) dx$ |